NESTING SUCCESS AND MORTALITY OF NESTLINGS IN A CATTLE EGRET COLONY

Julian L. Dusi and Rosemary T. Dusi

The writers have reported the complete failure, in 1965, of two nesting attempts of Cattle Egrets (*Bubulcus ibis*) in a colony located 15 miles southeast of Dothan, Houston County, Alabama (Dusi and Dusi, 1968). At that time, the slight nesting facilitation effects of a small colony, prolonged drought, and predation, were the ecological factors considered to be responsible for the failures.

During the 1967 season, a strong population and more ideal climatic conditions were present. The season seemed very similar to those of 1963 and 1964, when a strong population was present and a large number of young was produced. The major difference was that in 1963–64, the Little Blue Heron (*Florida caerulea*) was the dominant species and the Cattle Egret a lesser one. In 1967 the Cattle Egret was dominant (about 8,000 adults) and the Little Blue Heron represented by only about 300 adults. Other species were about the same: the White Ibis (*Eudocimus albus*) about 1,000; Common Egret (*Casmerodius albus*) 20; Snowy Egret (*Leucophoyx thula*) 10; and Anhinga (*Anhinga anhinga*) 4 adults.

Because this season very much resembled the previous successful seasons, we felt that an actual measurement of nesting success would be desirable for use in comparison with other seasons.

The nesting started with the Little Blue Herons, Common Egrets, and Snowy Egrets first establishing nests; then the Cattle Egrets came in large numbers to nest and roost, intermingling with the nesting Little Blue Herons and disturbing their nesting with their territorial disputes. This caused a certain amount of destruction of Little Blue Heron nests. Some of the nests were taken over by Cattle Egrets and their eggs deposited with those already laid by the Little Blue Herons.

PROCEDURES

Fifty nests were selected along an erratic transect line. We simply started at one point and took the nests as they came using no selection bias. Tags were placed on the tree trunks about three feet above the water level, where they could be easily seen. A mirror on a pole was used for observing nest contents above eye level. Therefore, the nests were disturbed no more than would be done by walking through the swamp near them. Four trips were made, over a period of 26 days, to evaluate the success of nesting.

RESULTS AND DISCUSSION

In the 50 nests there was a total of 126 eggs, 121 Cattle Egret eggs and five Little Blue Heron eggs, with a minimum of one egg in one nest and a maxi-

mum of seven eggs (3 Cattle Egret and 4 Little Blue Heron) in one. Clutch size averaged 2.42 eggs per nest. This is not much more than half of the usual clutch and is perhaps a result of a drought period of some extent before the nesting began. In one of the nests where there were already four Little Blue Heron eggs, three Cattle Egret eggs were added making a clutch of seven: in another there was one Little Blue Heron egg and only two Cattle Egret eggs were added to complete the clutch.

Fifteen nests (30 per cent) were successful and 35 (70 per cent) failed. Of the 126 eggs in the 50 nests, 18 (14.8 per cent) hatched and produced fledglings.

The number of initial failures, 15 (30 per cent) seems quite high. Of these, 14 were nests that were completely gone on the first visit after tagging. Poor construction did not hold them in place or the supporting structure broke and dropped them into the water. At this initial stage of nest development much territorial bickering was still taking place and this additional activity is hard on poorly constructed nests. Whether the birds renested elsewhere in the colony is not known. Nests were established in the colony after this date.

Of the other 21 failures, all but six resulted with the disappearance of the nest. This suggests that poor nest site selection and nest construction are the main causes of nest failure.

The other six failing nests were a result of either desertion, infertile eggs, or possibly predation. The nests either became empty, or nothing happened to the eggs during the study; so, they were either deserted or did not hatch.

In the case of the mixed clutches, eggs became reduced in number to two Cattle Egret eggs in the nest with a total of seven and the nest with two Cattle Egret and one Little Blue Heron eggs was lost. It is of interest, regarding mixed clutches, that in an isolated tree an unnumbered nest contained one young Cattle Egret and one Little Blue Heron, successfully reared together. Therefore, some mixed clutches were apparently reared successfully . . . probably by Cattle Egrets.

One extremely interesting cause of mortality of one of the nestlings was cannibalism (Dusi, 1968). In one nest with two young, examination showed that the three-week-old nestling was trying to swallow its dead 11-day-old nestmate. It had swallowed the head and neck up to the body. The body was too large to be swallowed, resulting in an impasse. We did not alter the situation. The following day, observations showed that the neck of the dead young had parted at the body and the cannibalistic nestmate had apparently finished swallowing the head and neck. We removed the rest of the dead carcass from the nest. It is not known whether the younger bird was eaten alive or whether it had died first. It is known that frequently the younger bird(s) of a clutch

disappear and this observation of cannibalism may provide an explanation to some of this mortality.

CONCLUSIONS

If we consider the nesting success of 30 per cent, insofar as actual nests are concerned (14.8 per cent for the successful transition from eggs to fledged young) and project the probable additional mortality before the young completely leave the nesting colony and then add the 70 to 80 per cent mortality rate for the rest of the first year (Dusi, 1963; Lack, 1949); the questions, not only of, "How can the species survive?", but also, "How can the Cattle Egret be so rapidly increasing in numbers?", are overwhelming apparent.

The picture is depressing and improbable from the individual nesting success standpoint. If, however, we think of the entire colony dynamics . . . the whole population concept . . . then quite a different picture emerges. Early in the nesting season (20 May), we estimated at least 4,000 Cattle Egrets, with 2,000 nests, in the colony. On 10 June, an evening count indicated at least 5,000 adults were present. A one-hour evening count, 4 August, totalled 6,650 adults flying in, in addition to those already in the area. We estimated a grand total of 9,000. Out of this colony we feel that at least 2,000 new individuals have been reared to a size where they were flying from the colony and possibly another thousand was still in the final stages of fledging. Therefore, as a whole, the colony added 2–3,000 new Cattle Egrets to the total population and even though inefficiency had been great, the mass nesting effects have been to greatly increase the numbers of Cattle Egrets.

LITERATURE CITED

Dusi, J. L. 1963. Mortality in the Little Blue Heron. Alabama Birdlife, 11:39–42.

Dusi, J. L. 1968. Competition between Cattle Egrets and Little Blue Herons. Alabama Birdlife, 16:4–7.

Dusi, J. L. and R. T. Dusi. 1968. Ecological factors contributing to nesting failure in a heron colony. Wilson Bull., 80:458–466.

Lack, D. 1949. The apparent survival-rate of ringed herons. Brit. Birds, 42:74–79.

THE DEPARTMENT OF ZOOLOGY–ENTOMOLOGY, AUBURN UNIVERSITY, AUBURN, ALABAMA, 29 MARCH 1969.